

## NOTICE TO ELECTRICAL CONTRACTORS

February 26, 2007

### PENETRATION OF A FIRE SEPARATION

What type of electrical material and installation methods should be used during the penetration of a fire separation?

The Canadian Electrical Code (CEC) has the following rule and sub-rules that are of particular interest in this matter.

*2-124 Fire Spread (see Appendices B and G)*

*(1) Electrical installations shall be so made that the probability of spread of fire through fire-stopped partitions, floors, hollow spaces, fire walls or fire partitions, vertical shafts, or ventilating or air-conditioning ducts is reduced to a minimum.*

*(2) Where a fire separation is pierced by a raceway or cable, any openings around the raceway or cable shall be properly closed or sealed in compliance with the National Building Code of Canada.*

Appendix B “Notes on Rules” is a general section that helps you interpret the code.

Appendix G “Electrical Installations of Fire Protection Systems” contains requirements for electrical installations mandated not by the CEC but by the National Building Code of Canada (NBC).

Appendix G refers to these NBC rules involving penetration of a fire separation:

*3.1.9.1(1) & (2) – Fire stopping of service penetrations through fire-rated assemblies or fire separations*

*3.1.9.3 – Penetration of fire-rated assemblies or fire separations by wires, cables, boxes, and raceways*

*9.10.9.6 – Electrical wiring and boxes and penetrating a fire separation*

Essentially, the requirement for electrical wiring penetrating a fire separation is determined by the building’s classification as per Part 2 of the NBC. In general, buildings that are

- More than 3 floors in height or have a footprint of more than 600 m<sup>2</sup> are Part 3 buildings.
- Buildings of three floors or less in height and with a footprint of 600 m<sup>2</sup> or less are Part 9 buildings.

In **Part 3 Buildings** all penetrations of a fire separation must be sealed by an approved sealant that has a fire-resistance rating of not less than the fire partition.

- Electrical wires and cables that are totally enclosed in a non-combustible raceway may penetrate the fire separation. AC90 metallic armored cable is a good selection in this case.
- Electrical wires and cables, or group of wires or cables, of at least FT4 rating may penetrate the fire separation providing the diameter of the wire, cable or groups of wire or cable is not more than 25 mm.
- Single-conductor metal-sheathed cables with combustible jacketing of larger than 25 mm may penetrate the fire separation providing the cables are not grouped.
- Combustible outlet boxes are permitted in a fire separation, as long the opening in the fire separation is no larger than 160 cm<sup>2</sup>. Back-to-back outlet boxes on either side of a fire separation are not permitted and must be offset to ensure the integrity of the fire separation.

**For Part 9 Buildings:**

- All penetrations of a fire separation must be sealed by an approved sealant that has a fire-resistance rating of not less than the fire partition.
- Electrical wires and cables that are totally enclosed in a non-combustible raceway may penetrate the fire separation.
- Electrical wires and cables, or group of wires or cables, with combustible jacketing, having a rating of at least FT4, may penetrate the fire separation providing the diameter of the wire, cable or groups of wire or cable is not more than 25 mm.
- Combustible outlet boxes are permitted in a fire separation as long as the opening in the fire separation is less than 160 cm<sup>2</sup> in size.

The Office of the Fire Marshal (867-873-7030) is the final authority when it comes to deciding what Part of the NBC applies to any particular building.

If you have, any questions regarding the directive, please contact your Regional Inspector.